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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WYSZOMIERSKI, GEORGE P

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/072,789	Applicant(s) FORREST ET AL. <i>cf</i>	
	Examiner George P Wyszomierski	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 6-9, 11 and 14-31 is/are rejected.
- 7) ☒ Claim(s) 2, 4, 5, 10, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20020208 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner. *See page 2.*
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20020208</u> . | 6) <input type="checkbox"/> Other: ____ |

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1. The papers filed with this application indicate that Applicant intended to file a Petition to Accept Color Photographs as Drawings (see item no. 13 on the Transmittal letter filed Feb. 8, 2002). However, no such petition is of record in the file. To insure consideration of the petition, Applicant is encouraged to Fax a copy of the petition to 703-872-9306 as soon as possible. At present, Drawing figure 8 is objected to as being at least partially in color, and was not filed with a petition including three sets of the color drawings and the fee set forth in 37 CFR 1.17(h).

2. Claims 13, 19-25 and 27-31 are objected to because:

a) Claim 13 is clearly intended to depend from claim 12 rather than claim 10 as presently drafted, and will be considered dependent upon claim 12 for purposes of this Office Action. In its present form, "said opposed end portions" lacks antecedent basis.

b) The preambles of claims 19-25 and 27-31 recite a "process" according to a previous claim. However, the previous claims are drawn to products (not processes) in product-by-process terms. It is well-settled that a product-by-process claim defines a product; see MPEP section 2173.05(p). The examiner suggests revising these claims to recite "A structural member as defined in claim XX, said process further comprising...."

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Abrams (U. S. Patent 4,395,296) or Cho (U.S Patent 4,816,087).

The prior art discloses steel (Abrams) or aluminum alloy (Cho) structures that include a fine grained structure on the outside of their respective materials which at least partially encompass a coarser grained structure. The fine grained portions on the opposing sides of the prior art structures would define the "plurality of regions...spaced apart and generally parallel" as recited in instant claim 7. With respect to the limitation that the refined grain structure regions "selectively improve the strength, toughness and fatigue resistance" of the structural member, such would appear to be an inherent consequence of the difference in grain sizes in the two portions of the structure, in either the prior art or the claimed invention. Thus, the configurations of the prior art structures appear to be the same (in the sense of 35 USC 102) as those defined in the instant claims.

The prior art does not specify that the first regions (the coarser grained portions of the prior art) are characterized by comparatively high operational stress. However, it is not possible to determine, whether in the prior art or in the present invention, what stress levels any of these

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materials will experience at some indefinite point in the future; Thus whatever stress the prior art materials may experience is held to be equivalent to that as defined in the instant claims.

Further, the prior art states that the Abrams and Cho materials have improved strength, and thus it can be assumed that Abrams and Cho intended for stress to be applied to those materials. Thus, at a minimum, the structures as claimed are held to be at best obvious variants of those as disclosed by Abrams or Cho.

5. Claims 1, 3 and 6 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Matlock et al. (U.S. Patent 4,883,545).

Matlock discloses a tubular shaped stainless steel material having fine grained surface which would at least partially encompass the coarser grained, center portion of the material. With respect to the limitation that the refined grain structure regions "selectively improve the strength, toughness and fatigue resistance" of the structural member, such would appear to be an inherent consequence of the difference in grain sizes in the two portions of the structure, in either the prior art or the claimed invention. Thus, the configurations of the prior art structures appear to be the same (in the sense of 35 USC 102) as those defined in the instant claims.

The prior art does not specify that the first regions (the coarser grained portions of the prior art) are characterized by comparatively high operational stress. However, it is not possible to determine, whether in the prior art or in the present invention, what stress levels any of these materials will experience at some indefinite point in the future; Thus whatever stress the prior art materials may experience is held to be equivalent to that as defined in the instant claims. Thus, at a minimum, the materials disclosed by Matlock et al. are held to create a prima facie case of obviousness of the presently claimed invention.

6. Claims 1, 3, 7 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bretz et al.

Bretz discloses an aluminum alloy material having a plurality of finer grained regions and coarser grained regions. From figure 1 of Bretz, the finer grained regions (the darker areas in the drawing figure) appear to be present in a configuration which meets the limitations as defined in instant claims 7 and 8. Bretz discloses such materials as having superior fatigue crack growth resistance. While Bretz does not specify improvement in strength or toughness, such would appear to be an inherent consequence of the difference in grain sizes in the two portions of the structure, in either the prior art or the claimed invention. Thus, the configurations of the prior art structures appear to be the same (in the sense of 35 USC 102) as those defined in the instant claims.

The prior art does not specify that the first regions (the coarser grained portions of the prior art) are characterized by comparatively high operational stress. However, it is not possible to determine, whether in the prior art or in the present invention, what stress levels any of these materials will experience at some indefinite point in the future; Thus whatever stress the prior art materials may experience is held to be equivalent to that as defined in the instant claims. Thus, at a minimum, the materials disclosed by Bretz et al. are held to create a prima facie case of obviousness of the presently claimed invention.

7. Claims 9, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrams or Cho.

Claims 9, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlock et al.

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Claims 9, 11, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bretz et al.

The prior art discloses structural members having the configurations as defined in the instant claims and which either possess or would inherently include properties as defined in the instant claims, as set forth in items 3, 4 and 5 supra.

The prior art does not specify a structural assembly including such a member secured together with other structural members. The examiner's position is that any practical application of the prior art members, i.e. the making of useful products from such members, would involve securing the prior art members to other structural members. For example, Cho is disclosed as useful in aircraft construction (see Cho column 1, line 22), and Matlock is disclosed as useful in making bolt heads or rivet heads (see Matlock column 1, lines 18-19). These products, as well as any useful products made from the materials of Abrams or Bretz, would include the prior art member secured to other members to form a final structure. Thus, a prima facie case of obviousness is established between the disclosures of Abrams, Cho, Matlock et al. or Bretz et al., and the presently claimed invention.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cho.

Cho discloses structural members suitable for aircraft parts (see Cho column 1, lines 19-30 and 52-55). An aircraft made therefrom would include the specific member as disclosed by Cho which meets the structural limitations of claim 9, and which would be secured to other members to form a structural assembly (an aircraft) as defined in claim 9. Cho does not specifically state that one forms a "frame" of an aircraft from the prior art member. However, the flat rolled sheet products disclosed by Cho would clearly be used for such a purpose when

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making an aircraft body. Thus, the disclosure of Cho is held to create a prima facie case of obviousness of the presently claimed invention.

9. Claims 18-23 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (U.S. Patent 6,302,315).

Thompson discloses structural members made by a friction stir welding process, i.e. by inserting a nonconsumable rotating tool comprised of a pin, often threaded, inserted between two metal pieces such as pieces of aluminum alloys and then removing the pin. The result is a fine grained, hot worked joint that is very strong and resistant to breaking (see Thompson column 1, lines 10-25). With respect to instant claim 19, the examiner's position is that whatever configuration the prior art materials are in prior to the above process is considered to be "pre-selected" by the artisan. With respect to instant claims 21 and 28, the examiner's position is that one of skill in the art would be aware that the stresses created by a metal working process will likely result in a material that is not in a finished condition, and that one would therefore desire to perform a finish machining step to achieve a desired tolerance of shape and thickness following such a process.

The prior art does not specify that one forms the above fine grained structure in a region of the member having a comparatively high operational stress. However, without any basis for comparison, the examiner's position is that any stress applied to the prior art materials can be considered "comparatively high". Further, it is not possible to determine, in either the prior art or the claimed invention, what levels of stress will be applied to any portion of the members created therein at some indefinite point in the future. Because the stress levels subsequently applied to the prior art members may be the same as those applied to the claimed members,

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the members prepared by Thompson are held to create a prima facie case of obviousness of those defined in the instant claims.

10. Claims 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Bretz et al.

Thompson does not disclose subjecting the prior art structural members to precipitation hardening as defined in the instant claims. This difference is not seen as resulting in a patentable distinction between the prior art and the claimed invention because:

a) The instant claims define process steps, and it is well settled that a product-by-process claim defines a product, and when the prior art discloses a product substantially the same as that being claimed, differing only in the manner by which it is made, the burden falls to applicant to show that any process steps associated therewith result in a product materially different from that disclosed in the prior art. See *In re Brown* (173 USPQ 685) and *In re Fessman* (180 USPQ 524).

b) Bretz indicates that it was conventional in the art, at the time of the invention, to subject aluminum alloys to precipitation hardening; see Bretz column 4, lines 22-30.

Thus, the instant claims appear to define nothing more than conventional steps known in the art of processing aluminum alloys, and it would have been an obvious expedient to one of ordinary skill in the art to employ such steps when processing the structural members of Thompson.

11. Claims 25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Cho.

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Thompson, described in item no. 8 supra, does not indicate that the prior art structural members are attached to other members to form the frame of an aircraft. Cho column 1 indicates that it was known in the art, at the time of the invention, to form aircraft parts which include, in at least some portion thereof, a structural member having a fine-grained microstructure.

Thus, it would have been considered an obvious expedient to one of ordinary skill in the art to form an aircraft frame that includes, at least in part, a fine grained member as made by Thompson.


12. Claims 2, 4, 5, 10, 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Note also the objection to claim 13 in item 1(a) supra.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. Effective October 1, 2003, all patent application related correspondence transmitted by facsimile must be directed to the central facsimile number, (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GPW
August 23, 2004


GEORGE WYSZOMIERSKI
PRIMARY EXAMINER